Ridgewood Orchard School

Remedial Action Plan Presentation

Agenda

- Opening
- Historical Chronology
- Nature of the Historic Fill at the Site
- Purpose of the Remediation
- Remedial Action Plan
- School Physician
- Q&A

Site Chronology

1910 – 1950	Residential coal ash from Village was disposed in the area ("Ridgewood Ash Landfill")
1950 – 1960s	Ash fill was covered with local soil materials ("Historic Fill")
	Orchard School constructed on former Ash Landfill
1980's	Investigation by PSEG of former Ridgewood Gas property
	Ash fill found throughout neighboring properties including Orchard School
1990's	Discussions between Ridgewood Village, PSEG and NJDEP regarding how ash fill should be addressed
	NJDEP recommends ensuring the burial of any visible ash material by at least 18 inches of soil across the property, where not already extant
1997	Remedial Action Workplan (RAW) submitted to NJDEP on behalf of Ridgewood Board of Education to complete the work at Orchard as recommended
1998	Remedial Action Workplan (RAW) was approved by NJDEP
2000	Regrading work at site was completed
2001	Remedial Action Report filed with NJDEP along with draft Deed Notice for approval

2001 – 2007	No review or approval of report or Deed Notice by NJDEP; project ended in 2001
2007	Ridgewood decides to conduct sampling for pesticides/herbicides in soil at Orchard School. PAHs and metals added to analysis
	PAHs detected above cleanup criteria
	Meeting with NJDEP at Orchard School to discuss next steps
	Board temporarily closes field pending additional evaluation
	Public meeting to present results
	Sampling workplan submitted to NJDEP for review and comment
	Additional sampling found that historic fill material extends across entire property and contain PAHs above criteria
	Report summarizing results submitted to NJDEP
	NJDEP declined to make any recommendation or to attend public Board meeting
	At public Board meeting, Board decided to reopen field based on opinion of its experts that results present minimal risk

2008	NJDEP publishes enforceable PAH remediation standards
2009	Site Remediation Reform Act was passed establishing a required timeline for all sites to be remediated and to retain an LSRP by 2012
2012	Board retained LBG to provide LSRP services
2014	Remedial Action/Remedial Investigation Report was filed with NJDEP summarizing the 2001 regrading and the 2007 sampling results
2017	NJDEP revised PAH remediation standards Decision to request alternate cleanup standard for the site based on recreational use scenario. Preparation of draft Risk Assessment
2019	Risk Assessment document was submitted to NJDEP NJDEP determined that alternate standard would not be approvable at a school property per policy; only acceptable approach would be removal or cap-in-place Conceptual remedial plan discussed with NJDEP to cap material on-site, with consideration of site land use constraints NJDEP conceptual approval of a cap that would allow use of cover material in floodplain

2020	Submission of Land Use Permit
	Submission of RAW
	Out to bid
	Perform Cap-in-Place Remediation
	Prepare Final Remedial Action Report Soil Remediation Permit with Deed Notice Prepare Response Action Outcome (RAO)
2021	Remedial Action deadline Begin Long-Term Monitoring and Certification

1959 Air Photograph Shortly Before Orchard School Construction

The cap at the site is primarily existing onsite soil (assumed to be clean). Some areas were regraded to ensure that the ash material was at least 18 inches below grade. Six inches of imported clean soil was added to the areas indicated to achieve required burial depth.

2000 – Areas Requiring Fill and Grading to Achieve Minimum 18-inch Depth to Ash

2000 – Playground Area Requiring Mulch Fill

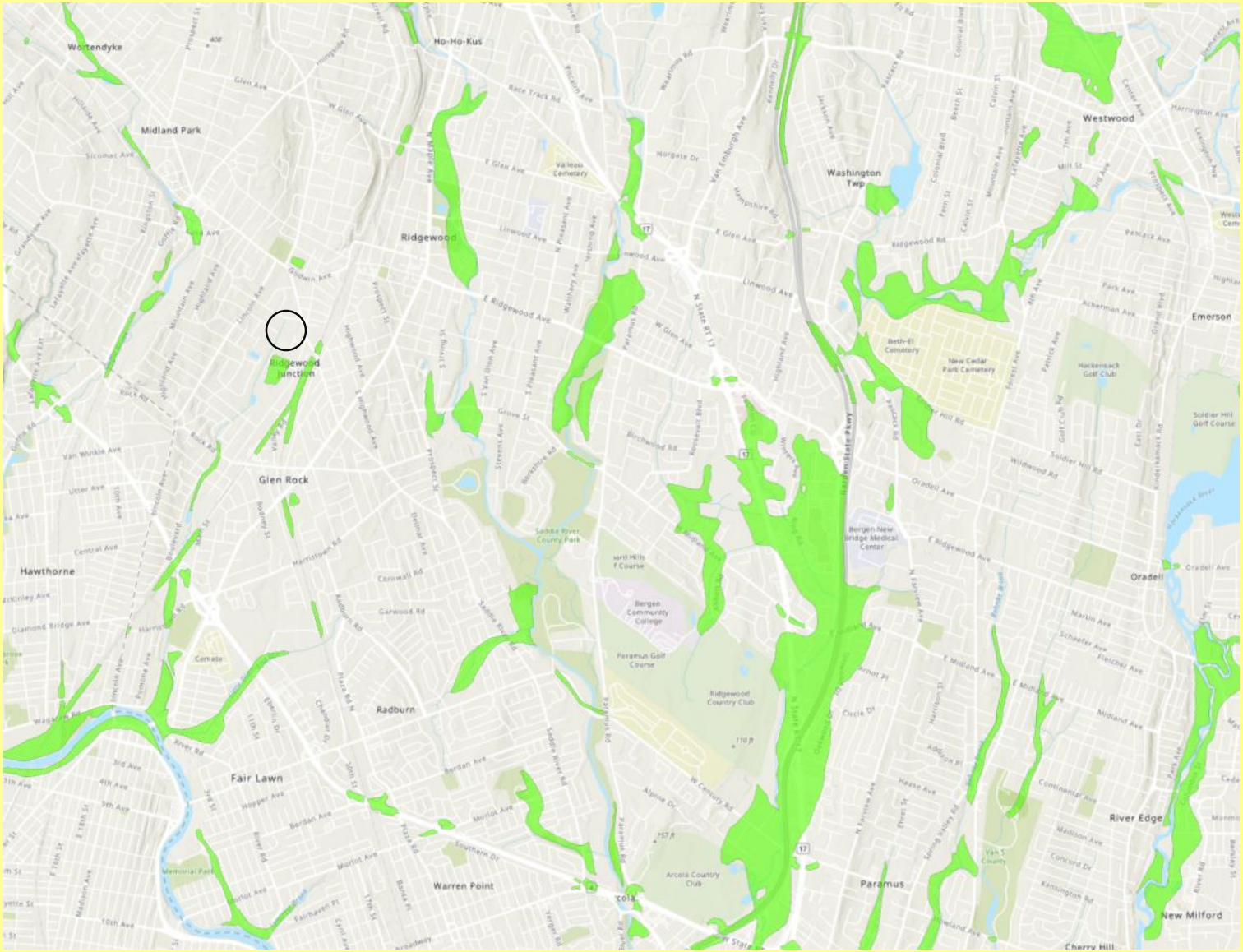
Historic Fill

Definition of Historic fill material

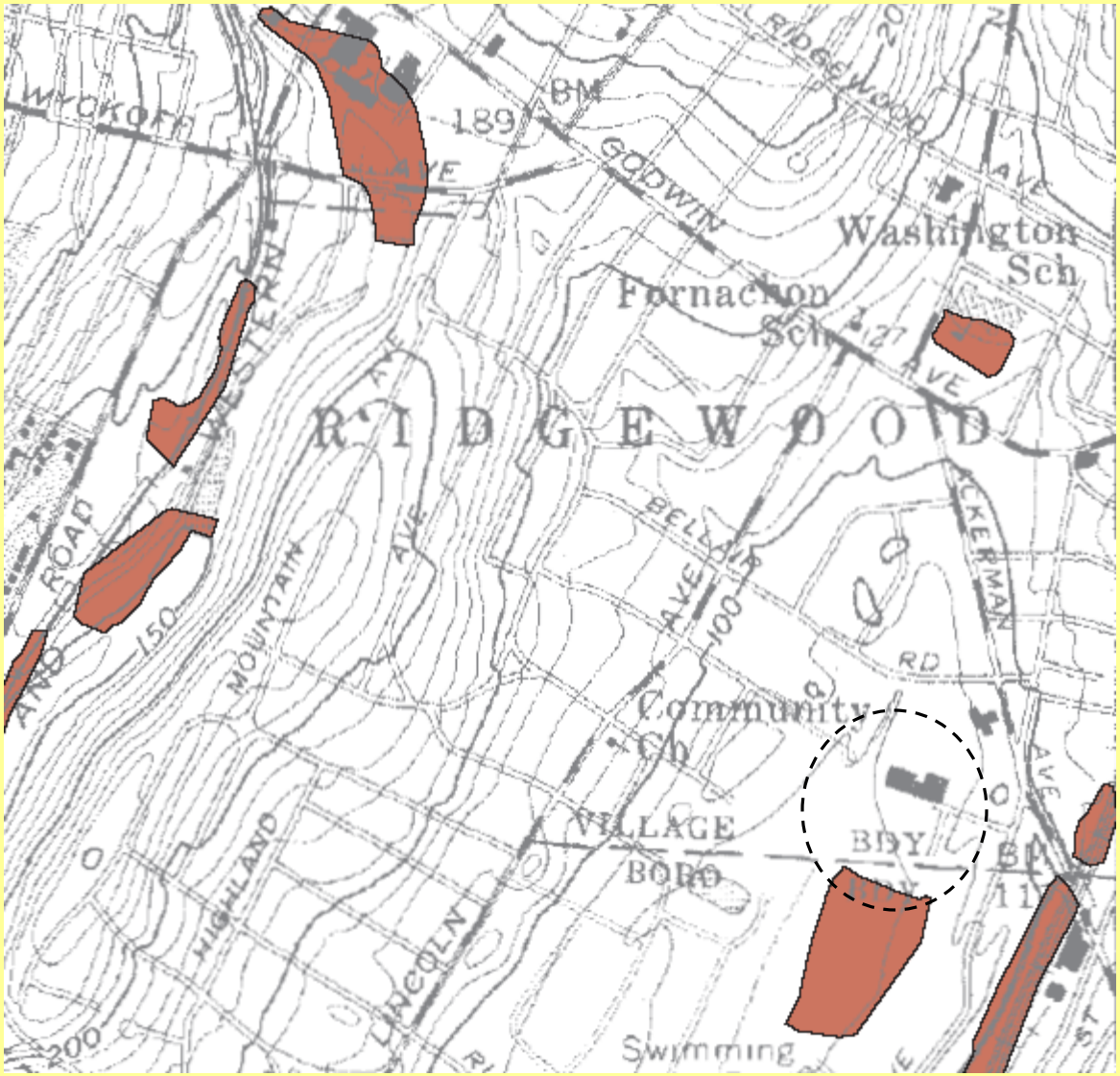
What it is

- Non-indigenous material, deposited to raise the topographic elevation of the site
- Was contaminated prior to emplacement
- Is in no way connected with the operations at the location of emplacement
- Includes construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, or non-hazardous solid waste

2007 Soil Sampling Program



Nearby areas with known Historic Fill


RIDGEWOOD
Washington Sch
Fornaction Sch
Community Ch
VILLAGE
BORO
WYCKOFF
GODWIN AVE
RIDGEWOOD AVE
WESTERN AVE
MOUNTAIN AVE
HIGHLAND
LINCOLN
BELLAIR
ACKERMAN
RD
ROAD
AND
150
100
200
189
BM
BDY
Swimming

PAHs | Metals

APPENDIX D
Historic Fill Database
Summary Table

	Minimum (ppm)[1]	Maximum (ppm)[1]	Avg (ppm)[1]	Number of Samples	Number > URU CDCSCC[2]	% > URU CDCSCC[2]	Number > RU CDCSCC[2]	% > RU CDCSCC[2]
B(a)A[3]	0.03	160.0	1.37	441	126	29	33	7
B(a)P[3]	0.02	120.0	1.89	431	146	34	146	34
B(b)F[3]	0.02	110.0	1.91	426	118	28	39	9
B(k)F[3]	0.02	93.0	1.79	412	101	25	26	6
I(1)P[3]	0.02	67.0	1.41	397	70	18	18	5
D(a)A[3]	0.01	25.0	1.24	286	78	27	78	27
Arsenic	0.05	1098	13.2	369	35	9	35	9
Be[3]	0.01	79.7	1.23	213	21	10	21	10
Cadmium	0.02	510	11.1	236	147	62	5	2
Lead	0.28	10700	574	538	259	48	119	22
Zinc	2.45	10900	575	197	80	4	8	4

[1] ppm = parts per million

[2] URU = Unrestricted Use, RU = Restricted Use, CDCSCC = Current Direct Contact Soil Cleanup Criteria

[3] B(a)A = Benzo(a)anthracene, B(a)P = Benzo(a)pyrene, B(b)F = Benzo(b)fluorene, B(k)F = benzo(k)fluoranthene, I(1)P = Indeno(1,2,3-cd)pyrene, D(a)A = Dibenzo(a,h)anthracene, Be = Beryllium

Benzo(a)pyrene (BaP) is the most common constituent exceeding residential standards in historic fill

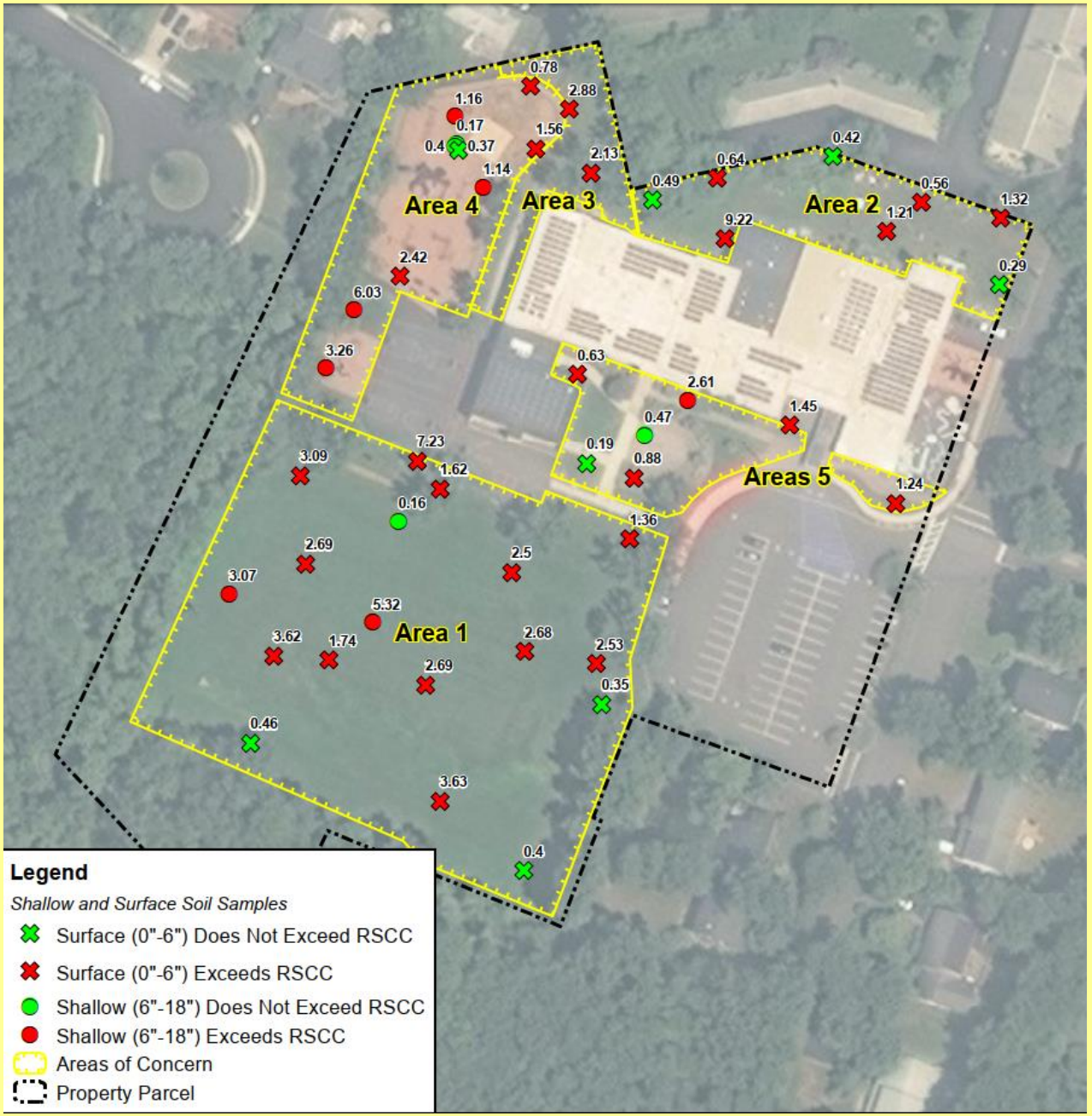
The NJDEP database shows BaP concentrations in New Jersey Historic Fill range from 0.02 to 120 ppm, with an average concentration of 1.89 ppm

NJDEP - Chemical Constituents in New Jersey Historic Fill

AREA	BaP
Area 1	2.37
Area 2	1.77
Area 3	2.50
Area 4	1.74
Area 5	1.06
Average Shallow	1.93

NJDEP Residential	0.50
NJDEP Non-Residential	2.00

2 samples (4%) exceeded lead standard
1 sample (2%) exceeded arsenic standard



2007 – Average benzo(a)pyrene as measured in shallow Historic Fill (ppm)

Remediation Plan

- Purpose of the remediation is to comply with NJDEP policy that requires meeting the 0.5 ppm residential standard for benzo(a)pyrene (and other PAHs)
- The standard can be achieved through capping the historic fill with clean soil and other barriers
- The work can be completed within the statutory timeframe established for this site under the Site Remediation Reform Act